

AMENDMENTS TO THE CLAIMS:

The present Amendment has been prepared in accordance with a revised format established by the U.S. Patent and Trademark Office, as permitted in the Pre-OG Notice entitled "Amendments in a Revised Format Now Permitted."

Please amend Claims 10-14, 18-20, and 23, and add new Claim 25, as follows. In accordance with the revised amendment format, all claims are presented below.

1-9 (Cancelled)

Dr. Hle
10. (Currently Amended) A laser comprising:
a first region with a first waveguide, said first waveguide including a first diffraction grating;
a second region with a second waveguide, said second waveguide including a second diffraction grating; and
a phase controlling region with a third waveguide, said phase controlling region including control means for controlling an effective refractive index of said third waveguide; wherein said phase controlling region, said ~~first~~ second region, and said ~~second~~ first region ~~being~~ are serially coupled ~~along a light propagation direction~~ in this order, and ~~being~~ are constructed such that a coupling coefficient of the diffraction grating of said ~~first~~ second region adjacent to said phase controlling region is smaller than a coupling coefficient of the diffraction grating of said ~~second~~ first region; and said first and second diffraction gratings have a common value of pitch.

11. (Currently Amended) A laser according to claim 10, said phase controlling region, said first region, and said second region being constructed such that light to said first second region from said phase controlling region is enlarged relatively to light to said phase controlling region from said first second region.

12. (Currently Amended) A laser according to claim 10, said first second region further including first control means for pumping said first second region, and said phase control means and said first control means of said second region being capable of independently controlling said phase controlling region and said first second region, respectively.

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13. (Currently Amended) A laser according to claim 12, said phase control means and said first control means of said second region being capable of independently injecting currents into said phase controlling region and said first second region, respectively.

14. (Currently Amended) A laser according to claim 10, said first region further including first control means for pumping said first region, said second region further including second control means for pumping said second region, and said first control means and said second control means being constructed such that a pumping amount of said first second region can be smaller than a pumping amount of said second first region.

15. (Original) A laser according to claim 10, said laser being constructed as a distributed feedback semiconductor laser.

16. (Original) A laser according to claim 15, said phase controlling region further including a cleaved end facet.

17. (Original) A laser according to claim 16, a reflective layer being provided on said cleaved end facet.

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18. (Currently Amended) A laser according to claim 15, said ~~second~~ first region further including an antireflection layer provided on a cleaved end facet of said ~~second~~ first region.

19. (Currently Amended) A method for driving a laser, said method comprising the steps of:

(A) preparing a laser including:

(1) a first region with a first waveguide, said first waveguide including a first diffraction grating;

(2) a second region with a second waveguide, said second waveguide including a second diffraction grating; and

(3) a phase controlling region with a third waveguide, said phase controlling region including control means for controlling an effective refractive index of said third waveguide, wherein said phase controlling region, said ~~first~~ second region, and

said ~~second~~ first region ~~being are~~ serially coupled ~~along a light propagation direction~~ in this order, and ~~being are~~ constructed such that a coupling coefficient of the diffraction grating of said ~~first~~ second region adjacent to said phase controlling region is smaller than a coupling coefficient of the diffraction grating of said ~~second~~ first region, and said first and second diffraction gratings have a common value of pitch; and

(B) changing a current injected into or a reverse voltage applied to the phase controlling region to change at least one of a polarization mode and a waveguide wavelength of light output from the laser.

20. (Currently Amended) A light transmitter comprising:

(A) a laser including:

(1) a first region with a first waveguide, said first waveguide including a first diffraction grating;

(2) a second region with a second waveguide, said second waveguide including a second diffraction grating; and

(3) a phase controlling region with a third waveguide, said phase controlling region including control means for controlling an effective refractive index of said third waveguide, wherein said phase controlling region, said ~~first~~ second region, and said ~~second~~ first region ~~being are~~ serially coupled ~~along a light propagation direction~~ in this order, and ~~being are~~ constructed such that a coupling coefficient of the diffraction grating of said ~~first~~ second region adjacent to said phase controlling region is smaller than a coupling coefficient of the diffraction grating of said ~~second~~ first region, and said first and second diffraction gratings have a common value of pitch;

(B) control means for controlling light output from said laser in accordance with a transmission signal; and

(C) a mode selector for selecting a component of a desired mode from the light output from said laser.

21. (Original) A light transmitter according to claim 20, said mode selector comprising a polarization-mode selector.

22. (Original) A light transmitter according to claim 20, said mode selector comprising a wavelength selector.

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23. (Currently Amended) An optical communication system for communicating over a light transmission line that transmits a signal from a transmitter side to a receiver side, said system comprising:

(A) a light transmitter for transmitting light of a signal through the light transmission line including:

(1) a laser including:

(a) a first region with a first waveguide, said first waveguide including a first diffraction grating;

(b) a second region with a second waveguide, said second waveguide including a second diffraction grating; and

(c) a phase controlling region with a third waveguide, said phase controlling region including control means for controlling an effective refractive

index of said third waveguide, wherein said phase controlling region, said first second region, and said second first region being are serially coupled ~~along a light propagation direction~~ in this order, and being are constructed such that a coupling coefficient of the diffraction grating of said first second region adjacent to said phase controlling region is smaller than a coupling coefficient of the diffraction grating of said second first region, and said first and second diffraction gratings have a common value of pitch;

(2) control means for controlling light output from said laser in accordance with a transmission signal; and

(3) a mode selector for selecting a component of a desired mode from the light output from said laser; and

(B) a receiver for receiving and detecting an intensity-modulated signal transmitted from the laser through the light transmission line.

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24. (Original) An optical communication system according to claim 23, said system being a wavelength division multiplexing optical communication system, in which the light transmission line transmits a plurality of intensity-modulated signals at a plurality of wavelengths generated by a plurality of said transmitters, and a wavelength selector selects the intensity-modulated signal at a desired wavelength to be detected on a side of said receiver.

25. (New) A laser according to claim 10, wherein said phase controlling region includes a reflective layer.